



Directorate of
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Soviet Work on Radar Cross Section Reduction Applicable to a Future Stealth Program

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An Intelligence Assessment

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SW 84-10015
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An Intelligence Assessment

The author of this paper is [redacted] Office of
Scientific and Weapons Research. Comments and
queries are welcome and may be directed to the
Chief, Air Defense Branch, OSWR, on [redacted]

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**Soviet Work on Radar
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Key Judgments

*Information available
as of 1 November 1983
was used in this report.*

We feel certain that the Soviets did not have a Stealth program in the 1970s—a program that uses both body shaping and radar-absorptive materials to attain a true low-observable aircraft or any other platform. Because of the obvious high US interest in this area, the Soviets probably began an intensified research effort in the early 1980s which may have led to a developmental program now under way. Such a program could be well along before we become aware of it.

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For the last 20 years the Soviets have used—with modest success—radar-absorptive materials or paint on submarines, reentry vehicles, aircraft, and possibly on spacecraft and ground vehicles. Their results are not comparable to the best US work, but the Soviet work has continued to improve in both quantity and quality. Given the attention to Stealth in the United States, Soviet application probably will become more widespread in the future. Most certainly, the Soviets will be highly motivated to assess US achievements in radar cross section reduction to improve their own position. An analysis of Soviets' open literature indicates that their understanding of the theory of radar cross section reduction is comparable to that in the United States.

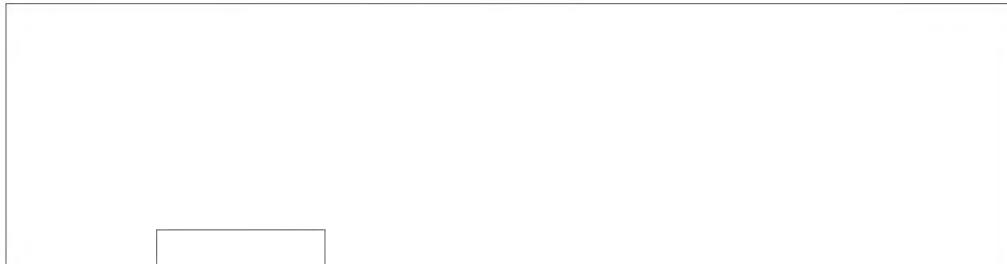
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A number of Western countries also have begun programs to reduce aircraft radar cross sections. As the technology becomes more widespread, technology transfer to the Soviets could begin to play a significant role in enhancing their work.

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The Soviets probably will deploy in this decade some retrofitted aircraft and cruise missiles whose radar cross sections in the forward sector will have been reduced by a factor of 10. Such programs would primarily involve the application of radar-absorptive materials to existing platforms. The cross sections of bombers could be reduced in this manner to about 1 square meter; those of fighter aircraft could be reduced to a fraction of a square meter; and those of cruise missiles could be reduced to less than one-hundredth of a square meter. In some tactical engagements, such reductions would provide a significant advantage. Retrofitted aircraft or cruise missiles would be difficult to detect visually because there would be very little change in their external appearance.

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Technology applicable to RCS reduction has already been transferred to the Soviet Union. We expect such transfer to enhance Soviet work in radar-absorptive materials since much of the progress in the area has been based on trial and error. Soviet interest in acquiring composite material technology probably is driven by different aerospace applications, but the information could be applied to developing vehicles with reduced RCS.

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